What is claimed is:

1. An isolated flt3-ligand (flt3-L) polypeptide.
2. A polypeptide according to claim 1 that is murine flt3-L.
3. A polypeptide according to claim 1 that is human flt3-L.
4. A polypeptide according to claim 3, comprising amino acids 1-235 of SEQ ID NO:6.
5. A polypeptide according to claim 1 that is a soluble flt3-L.
6. A polypeptide according to claim 5, comprising amino acids 28-160 or 28-182 of SEQ ID NO:6.
7. A polypeptide according to claim 3 that is encoded by the cDNA insert of vector sfHAVEO410 in *E. coli* DH10B cells having accession number ATCC 69382.
8. An isolated DNA sequence encoding a flt3-L polypeptide.
9. An isolated DNA sequence according to claim 8, encoding a murine flt3-L polypeptide.
10. An isolated DNA sequence according to claim 8, encoding a human flt3-L polypeptide.
11. An isolated DNA sequence according to claim 8, which encodes the amino acid sequence 28-160 or 28-182 of SEQ ID NO:6.
12. A DNA according to claim 8, selected from the group consisting of:
    (a) cDNA derived from the coding region of a flt3-L gene;
    (b) cDNA sequences selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:5;
    (c) DNA sequences that hybridize under moderately stringent conditions to the cDNA of (a) or (b), and which DNA sequences encode flt3-L;
    (d) DNA sequences that, due to the degeneracy of the genetic code, encode flt3-L polypeptides having the animo acid sequence of the polypeptides encoded by the DNA sequences of (a), (b) or (c).
13. An expression vector comprising a DNA sequence according to claim 8.
14. An expression vector comprising a DNA sequence according to claim 9.
15. An expression vector comprising a DNA sequence according to claim 10.
16. An expression vector comprising a DNA sequence according to claim 11.
17. An expression vector comprising a DNA sequence according to claim 12.
18. A host cell transfected or transformed with the expression vector according to claim 13.

19. A host cell transformed or transfected with the expression vector according to claim 14.

20. A host cell transformed or transfected with the expression vector according to claim 15.

21. A host cell transformed or transfected with the expression vector according to claim 16.

~~22.~~ A host cell transformed or transfected with the expression vector according to claim ~~17.~~

23. A process for producing a flt3-L polypeptide, comprising culturing a host cell according to claim 18 under conditions promoting expression, and recovering the polypeptide from the culture medium.

24. A process for producing a flt3-L polypeptide, comprising culturing a host cell according to claim 19 under conditions promoting expression, and recovering the polypeptide from the culture medium.

25. A process for producing a flt3-L polypeptide, comprising culturing a host cell according to claim 20 under conditions promoting expression, and recovering the polypeptide from the culture medium.

26. A process for producing a flt3-L polypeptide, comprising culturing a host cell according to claim 21 under conditions promoting expression, and recovering the polypeptide from the culture medium.

~~27.~~ A process for producing a flt3-L polypeptide, comprising culturing a host cell according to claim ~~22~~ under conditions promoting expression, and recovering the polypeptide from the culture medium.

28. An antibody that is immunoreactive with a flt3-L polypeptide.

29. An antibody according to claim 28 that is a monoclonal antibody.

30. A pharmaceutical composition comprising an effective amount of a flt3-L polypeptide according to claim 1 and a pharmaceutically acceptable carrier, excipient or diluent.

31. A pharmaceutical composition comprising an effective amount of a flt3-L polypeptide according to claim 3 and a pharmaceutically acceptable carrier, excipient or diluent.

32. A pharmaceutical composition comprising an effective amount of a flt3-L polypeptide according to claim 5 and a pharmaceutically acceptable carrier, excipient or diluent.

33. A method for conducting autologous transplantation in a patient receiving cytoreductive therapy, comprising:

(a) collecting hematopoietic progenitor cells or stem cells from the patient prior to cytoreductive therapy; and

(b) administering the collected cells to the patient following cytoreductive therapy;

wherein the method further comprises at least one of the following steps:

(i) administering an effective amount of flt3-L to the patient to increase the number of circulating progenitor cells or stem cells prior to collection;

(ii) expanding the progenitor cells or stem cells *ex vivo* by contacting them with an effective amount of flt3-L; and

(iii) administering an effective amount of flt3-L to the patient to facilitate engraftment of the transplanted progenitor or stem cells in the patient.

34. A method according to claim 33, wherein flt3-L is used in combination with a cytokine selected from the group consisting of CSF-1, GM-CSF, SF, G-CSF, EPO, IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, GM-CSF/IL-3 fusion proteins, LIF and FGF, and sequential or concurrent combinations thereof.

35. A method according to claim 34, wherein flt3-L is used in combination with a cytokine selected from the group consisting of GM-CSF, SF, G-CSF, EPO, IL-3 and GM-CSF/IL-3 fusion proteins.

36. A hematopoietic cell expansion media comprising cell growth media, and an effective amount of a flt3-L polypeptide according to claim 1.

37. A method of transfecting an exogenous gene into an early hematopoietic cell comprising the steps of:

(a) culturing the early hematopoietic cells in media comprising an effective amount of a flt3-L polypeptide; and

(b) transfecting the cultured cells from step (a) with the gene.

38. A method of transferring an exogenous gene to a mammal comprising the steps of:

(a) culturing early hematopoietic cells in media comprising an effective amount of a flt3-L polypeptide;

(b) transfecting the cultured cells from step (a) with the gene; and

(c) administering the transfected cells to the mammal.

39. A method of stimulating the proliferation of T cells in a mammal comprising administering to the mammal an effective amount of a flt3-L polypeptide according to claim 1.

40. A method of stimulating the proliferation of cells of the erythroid lineage in the spleen of a mammal comprising administering to the mammal an effective amount of a flt3-L polypeptide according to claim 1.

41. A method according to claim 40, further comprising the administration of an effective amount of EPO.

42. A method of treating a patient having symptoms of myelodysplastic syndrome, comprising the administration to the patient of an effective amount of a flt3-L polypeptide according to claim 1 and, optionally, an effective amount of one or more growth factors selected from the group consisting of CSF-1, GM-CSF, SF, G-CSF, EPO, IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, GM-CSF/IL-3 fusion proteins, LIF and FGF.

43. A method of treating a patient having symptoms of anemia, comprising the administration to the patient of an effective amount of a flt3-L polypeptide according to claim 1 and, optionally, an effective amount of one or more growth factors selected from the group consisting of CSF-1, GM-CSF, SF, G-CSF, EPO, IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, GM-CSF/IL-3 fusion proteins, LIF and FGF.

44. A method of treating a patient having symptoms of acquired immune deficiency syndrome, comprising the administration to the patient of an effective amount of a flt3-L polypeptide according to claim 1 and, optionally, an effective amount of one or more growth factors selected from the group consisting of CSF-1, GM-CSF, SF, G-CSF, EPO, IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, GM-CSF/IL-3 fusion proteins, LIF and FGF.

45. A method according to claim 44, wherein the patient is receiving AZT therapy.

46. A transgenic non-human mammal all of whose germ and somatic cells contain a DNA sequence according to claim 8 introduced into said mammal, or an ancestor of said mammal, at an embryonic stage.

47. A method of separating cells having the flt3 receptor on the surface thereof from a mixture of cells in suspension, comprising contacting the cells in the mixture with a contacting surface having a flt3-binding protein thereon, and separating the contacting surface and the suspension.

48. A method according to claim 47, wherein the flt3-binding protein is flt3-L.

add a2

add B'